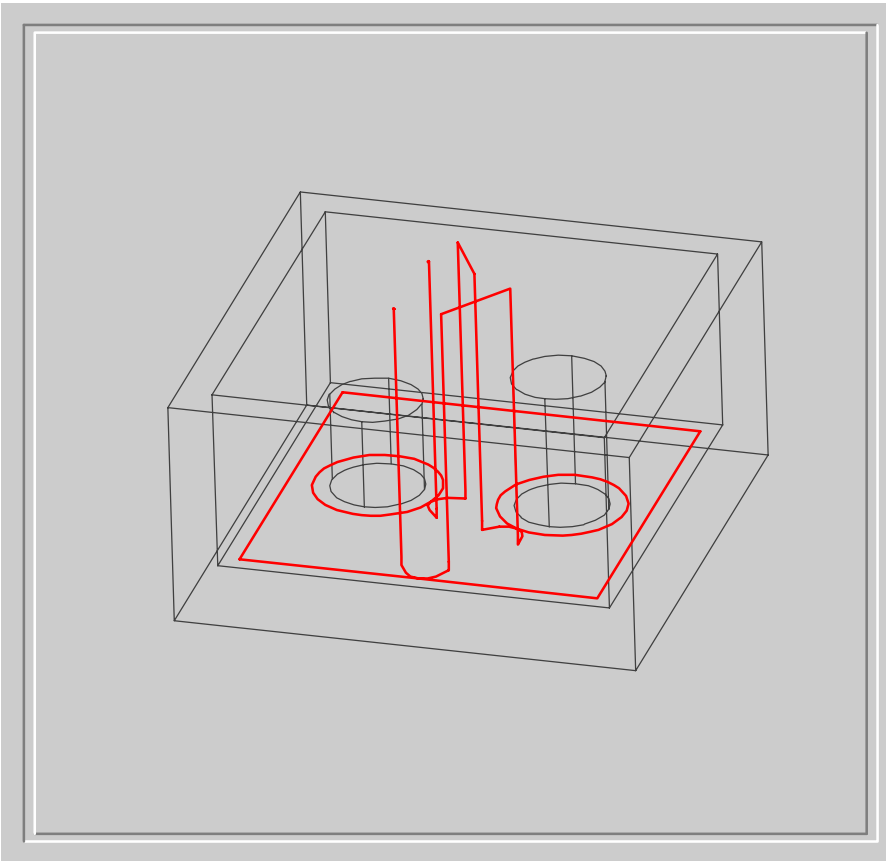


Creating CL Files and Postprocessing

I-DEAS® Tutorials: Milling Projects and Turning Projects

After you've planned your job and generated all the toolpaths, you need to output and postprocess the CL data for a machine tool. In this tutorial, you'll learn how to create a CL file and postprocess it into a tape file.

You'll also learn how to insert transition operations and edit CL data in Generative Machining.

Learn how to:

- edit CL data
- write an ASCII CL file
- create a tape file with C-Post

Before you begin...

Prerequisite tutorials:

- all tutorials under the Modeling Fundamentals menu
- Introduction to Generative Machining
- Building a Setup Assembly
- Generating In-process Stock and Checking Validity
- Working with Tools and Tool Catalogs
- Picking Holes
- Setting Machining Parameters for Hole-making Operations

The file you need for this tutorial is distributed with the product. You must copy it into your local directory.

Move to the local directory where you want to copy the file. Then:

In UNIX:

```
cp $SDRC_INSTL/examples/nc/3mill.ppr .
```

In Windows:

```
copy %SDRC_INSTL%\examples\nc\3mill.ppr .
```

If you can’t copy the file, you may have to set up the variable needed to copy from the I–DEAS installation.

```
. sdrc_oadev
```

If you can’t access the file, contact your system administrator. The file may not be installed.

Retrieve the model file that you created in the Introduction to Generative Machining tutorial.

File
Open

Model File Name: ncstart
OK

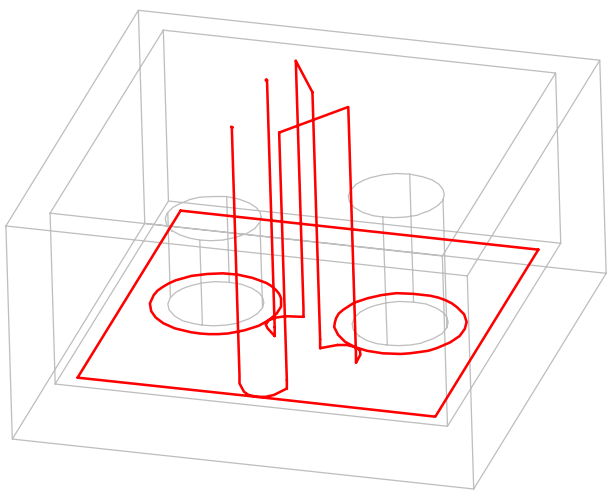
Make sure you're in the following application and task:

Application: Manufacturing
Task: Generative Machining

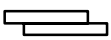
Set your units to inches.

Options
Units

Inch (pound f)



Recovery Point



File
Save

Warning!

If you're prompted by I-DEAS to save your model file, respond:

No

Save only when the tutorial instructions tell you to—not when I-DEAS prompts for a save.

If you make a mistake at any time between saves and can't recover, you can reopen your model file to the last save and start over from that point.

Hint

To reopen your model file to the previous save, press Control-Z.

After you generate a toolpath, you may want to modify its CL data. You can add non-motion CL records, such as auxiliary functions, cutter compensation, or optional stops; and motion CL records, such as GOTO statements.

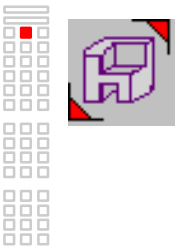
There are two methods you can use to edit CL data. If you want to insert CL records immediately before an operation, use the Transition Operation function. If you want to insert CL records within or after an operation, use the Edit CL function.

Transition operations control the movement of the tool between machining operations. These operations include transition motion, tool change, rotary axis, and postprocessor/machine control commands.

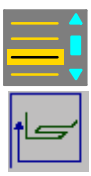
In the next steps, you'll examine the CL data for a face mill operation. You'll use the Transition Operation function to add an auxiliary record, and the Edit CL function to add coolant and feedrate records. Then, you'll reprocess the toolpath to delete some of your modifications and to see how the validity flag changes.

What: Pick a face mill operation and examine the CL data.

How:



NC Job Planning form



Face Mill Top of Part

Edit CL form

Things to notice

Notice that the list is divided into two sublists:

- Main Toolpath List—appears between the Start and End of Toolpath markers
- Post-Toolpath List—appears after the End of Toolpath marker

Notice also, that the Main Toolpath list does not contain an AUXFUN/1 record. The significance of this will become clear later.

 *Dismiss*

Don’t close the NC Job Planning form.

What: Pick a face mill operation and insert an auxiliary record.

How:

NC Job Planning form

Show Transitions (turn on)

Transition Operation (above Face Mill Top of Part)

Transition Operations form

Insert CL commands (in *Move Categories* list)

CLout “AUXFUN/0” (in *Insert CL Commands* list)

Edit the CLout “AUXFUN/0” statement in the *Move List* list by clicking slowly on it twice. Change the 0 to 1. Then press Enter.

Don’t close the Transition Operations form.

What: Animate the toolpath and examine the CL data to see the statement you inserted.

How:

Transition Operations form

Animate Tool form

Things to notice

Notice the AUXFUN/1 statement that you inserted.

Dismiss

OK

Don’t close the NC Job Planning form.

What: Add a coolant record to the Post-Toolpath List. You can add only non-motion CL records to the Post-Toolpath List.

How:

NC Job Planning form


Show Transitions (turn off)


Face Mill Top of Part

Edit CL form


pick *End of Toolpath* (scroll to end of list)


deselect *End of Toolpath*

Press the Control key, then pick *End of Toolpath*. You complete these steps to ensure everything is deselected.

Edit/Insert form


Insert Type: Coolnt


Flood


OK

Things to notice COOLANT/FLOOD appears after the End of Toolpath marker on the CL list. Also, notice that the AUXFUN/1 record that you added is not visible in the CL list. Any CL records that you insert using the Transition Operation function are not visible in the CL list. To see them, turn on *Show Transitions* on the NC Job Planning form, or animate the toolpath.


Don’t close the Edit CL form.

What: Add a feedrate record to the Main Toolpath List. You can add motion and non-motion records to this list.

How:

Edit CL form

GOTO (select any GOTO statement except a GOTO/CIRCLE or GOTO/SPLINE)

Edit/Insert form

Insert Type: Fedrat

Feedrate: 19

OK

Things to notice

FEDRAT/19.0000, IPM is inserted ahead of the GOTO statement in the CL list.

Dismiss

Don’t close the NC Job Planning form.

What: Reprocess the toolpaths for all operations in the setup. After you reprocess the operations, any changes you've made to the Main Toolpath List are lost. The software saves the changes to the Post-Toolpath List, however.

How:

NC Job Planning form

 Setup–1

Things to notice

The validity flag, "o", next to the Face Mill Top of Part operation indicates the toolpath has been modified.

I–DEAS Warning

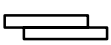
 *OK*

Things to notice

The validity flag for the face mill operation changes from "o" to "+" to indicate it is now valid. In this instance, the toolpath has been updated and your changes to the Main Toolpath List are lost.

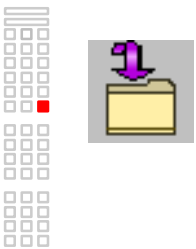
 *Dismiss*

Recovery Point

 *File*
Save

In this step, you'll create an ASCII CL file for the setup. A CL file contains the cutter location data for the selected operations. ASCII CL records follow the ISO CL standard. The file can be read using any editor or programming language.

How:



CL Output form

ASCII File

post_file

OK

I–DEAS Warning

OK

Recovery Point

File
Save

Things to notice

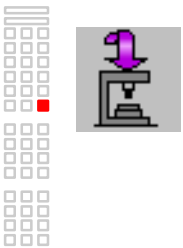
The software saves the CL file to the directory where you started I-DEAS. It also adds a .cl suffix to the end of the file name, post_file.cl.

Now, you'll convert the ASCII CL file and create a tape file with I-DEAS C-Post. When you postprocess a file, you must specify an option file, which defines the machine tool and the toolpath file format that you want. You'll pick the option file you copied earlier that was supplied with the software.

After you make a tape file, you can send it to your machine tool and begin machining your part.

What: Specify the CL file and option file, then name the tape file.

How:



Post CL File form

 (next to *Option File*)

 3mill.ppr

 *OK*

 (next to *CL File*)

 post_file.cl

 *OK*

 *Tape file:* ncstart.tp

 *POST*

Things to notice

A window appears for I-DEAS C-Post.

What: Enter a program number and then exit C-Post.

How:

I-DEAS: C-Post window

The software displays the names of the CL file, the option file, and the tape file. The program number is the file name for the tape file that the machine controller recognizes. This number is on the first line of the tape file and has a letter O in front of it.

Enter program number: 0001 and press Return.

Press Return to exit.

The window also shows the size of the toolpath file. The first number is the size of the electronic file, and the second number is the length of the punch tape.

You can find the tape file in the directory from which you started I-DEAS.

Tutorial wrap-up

You’ve completed the Creating CL Files and Postprocessing tutorial.